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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,590	11/13/2003	Michael A. Yandrasits	59390US002	8997
32692	7590	08/12/2005	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY			MCCLENDON, SANZA L	
PO BOX 33427			ART UNIT	
ST. PAUL, MN 55133-3427			PAPER NUMBER	

1711

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/712,590

Applicant(s)

YANDRASITS ET AL.

Examiner

Sanza L. McClendon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-58 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 26/2005
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Terminal Disclaimer

1. In response to the Amendment received on May 26, 2005, the examiner has carefully considered the amendments.
2. The terminal disclaimer filed on May 25, 2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US application number 10/733,211 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Response to Arguments

3. Applicant's arguments, see Response, filed May 26, 2005, with respect to the rejection(s) of claim(s) 1-3, 7-22, 28-32, 36-51, and 57-58 under 35 USC 103(a) as unpatentable over JP 54-052690 have been fully considered and is not persuasive. The method of making said crosslinked polymer appears to be obvious and the crosslinked polymers obtained as found in the above listed claims appears to be the same polymer, since the halogen terminals will be liberated upon crosslinking. The courts have maintained (In re Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980)). Rejections under 35 U.S.C. 103 is indicated where prior art discloses product that appears to be either identical with or only slightly different from product claimed in product-by-process claim; Patent Office can require applicant to prove that prior art products do not necessarily or inherently possess characteristics of his claimed product; whether rejection is based on "inherency" under 35 U.S.C. 102, on "prima facie

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obviousness" under 35 U.S.C. 103, jointly or alternatively, burden of proof is same; Patent Office that has reason to believe that functional limitation asserted to be critical for establishing novelty in claimed subject matter may, in fact, be inherent characteristic of prior art, possesses authority to require applicant to prove that subject matter shown to be in prior art does not possess characteristic relied on.

4. Additionally, the examiner deems that the rejection under new rejection is warranted based on the PG PUB patent application 2005/0131097 to Jing et al, which is the published patent application 10/733,211 of the double patenting rejection and one based on PGPUB patent application US2005/0107488, which is the published application of 10/712,316 of the double patenting rejection—see below. US 2005/0131097 additionally qualifies as prior art under another subsection of 35 U.S.C. 102, and therefore, is not disqualified as prior art under 35 U.S.C. 103(c).

Applicant may overcome the applied art either by a showing under 37 CFR 1.132 that the invention disclosed therein was derived from the invention of this application, and is therefore, not the invention "by another," or by antedating the applied art under 37 CFR 1.131.

5. Additionally, a new obvious-type double patenting rejection over Application number 10/733,211 in view of JP 54-052690 will be made. JP 54-052690 teaches other forms of radiation, such as ionizing radiation on page 10 of the translated document (see PTO-892). Wherein it is well known that electron beam is an accepted form of ionizing radiation. Therefore one of ordinary skill in the art would have found it obvious to use electron beam radiation. The motivation would have been a reasonable expectation of obtaining a fully cured membrane with a fast cure mechanism that

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does not leave residual photoinitiator within the crosslinked membrane matrix in the absence of evidence to the contrary.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application.

See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-3, 7-22, 28-32, 36-51 and 57-58 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 and 23-43 of copending Application No. 10/733,211 in view of JP 54/052690. 10/733,211 teaches methods of

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making crosslinked polymers wherein said polymer substantially overlap in scope with the instant invention. The primary difference in the methods is the form of radiation used in the crosslinking step (b)—electron beam in the instant invention and ultra-violet for 10/733,211. JP 54-052690 teaches other forms of radiation, such as ionizing radiation on page 10. Wherein it is well known that electron beam is an accepted form of ionizing radiation. Therefore one of ordinary skill in the art would have found it obvious to use electron beam radiation. The motivation would have been a reasonable expectation of obtaining a fully cured membrane with a fast cure mechanism that does not leave residual photoinitiator within the crosslinked membrane matrix in the absence of evidence to the contrary.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1-2, 7-9, 13-14, 28-31, 36-38 and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asawa et al (JP 54-052690).

Asawa et al teaches improved fluorine-containing cation exchange membranes. Said membranes are obtained by casting and then crosslinking a fluoro-polymer using radiation. Said polymer is prepared by copolymerization of an iodine-containing vinyl-ether, a fluorinated olefin, and a fluorine-containing monomer having an ion exchange group or functional group convertible to

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an ion exchange group. Per the abstract general formulas for the iodine containing vinyl ether, fluorinated olefin, and the fluorine-containing monomer can be found, wherein the polymer obtained from copolymerization appear to read on the fluorinated fluoropolymer as described in instant claim 1. Asawa et al does not expressly teach crosslinking said fluoropolymer once cast into a membrane with electron beam irradiation. However, the examiner deems that it would have been obvious for an ordinarily skilled artisan at the time of the invention to crosslink using electron beam irradiation. The motivation would have been a reasonable expectation of obtaining a crosslinked membrane without residual photoinitiator, which are known additives in radiation curing, in the final product in the absence of evidence to the contrary and/or unexpected results.

10. Claims 1-2 and 7-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jing et al (US 2005/0131097) in view of Asawa et al (JP 54-052690).

Jing et al teaches polymer electrolyte crosslinked by ultraviolet radiation. Said polymer to be crosslinked comprises a backbone derived from in part tetrafluoro-ethylene monomer and has a first pendent ion exchange group having the formula found in the abstract and a second pendent group which includes Br, Cl, or I. Jing et al teaches casting said polymer and crosslinking by exposure to ultraviolet radiation. Said membrane typically will have thickness from 90 microns or less, preferably from at least 30 microns or less. It is additionally taught that said polymer could be, before exposure, imbibed into a porous support matrix, such as a polytetrafluoroethylene web matrix. The primary difference in the methods is the form of radiation used in the crosslinking step (b)—electron beam in the instant invention and ultra-violet in Jing et al.

However Asawa et al teaches similar polymers (see abstract) can be crosslinked using ionizing radiation, wherein electron beam radiation is a well-know acceptable form ionizing radiation. Therefore an artisan of ordinary skill in the art would have found it obvious to prepare a crosslinked polymer using electron beam irradiation from the method of Jing et al. The motivation would have been a reasonable expectation of obtaining a crosslinked membrane without residual photoinitiator, which are known additives in ultraviolet radiation curing, in the final product in the absence of evidence to the contrary and/or unexpected results.

11. Claims 1-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yandrasits et al (2005/0107488).

Yandrasits et al teaches polymer electrolytes crosslinked by e-beam. Said polymer has a backbone derived from tetrafluoro-ethylene monomer having a first pendent group, as found in the abstract. Said membrane is formed by casting and then crosslinked by electron beam radiation. Wherein said polymer might be imbibed into a porous supporting matrix, wherein said useable matrices can be found in paragraph [0041]. Said membrane typically will have thickness from 90 microns or less, preferably from at least 30 microns or less. Said radiation used in the crosslinking step typically has a dosage of 1 Mrads or more, more typically 3 Mrads or more, most typical from 5 to 15 Mrads or more—[0041].

The difference between the instant claims and the copending application is the defined second pendent groups and the backbone derived from tetrafluoroethylene in the instantly claimed

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polymer (a). However, the examiner deems that Yandrasits et al does not positively exclude a second pendent group, such as I, Br or Cl.

However, it is taught in the prior art, such as in JP 54-052690 to Asawa et al, similar highly fluorinated co-polymers using fluorinated monomer having SO₂X groups, vinyl-ether monomers comprising halogens, such as iodine, and fluorinated olefins, such as trichlorotrifluorethylene. Therefore it would have been obvious for an artisan to prepare crosslinked polymers comprising a highly fluorinated polymer such as taught by Yandrasits et al having a tetrafluoroethylene backbone and having pendent SO₂X groups and halogen groups, such as iodine from the teaching of JP 54-052690. The motivation would have been a reasonable expectation of obtaining a fluorine-containing cation exchange membrane with improved properties and electrochemical properties, such as suggested by JP 54-052690.

EXAMINER'S AMENDMENT

12. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

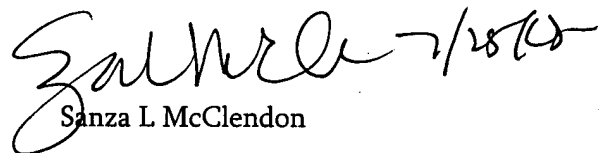
In claims 1-58, please insert the following status identifiers: (Currently Pending).

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L. McClendon whose telephone number is (571) 272-1074. The examiner can normally be reached on Monday through Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Sanza L. McClendon', with a date '7/25/02' written to the right of the signature.

Sanza L. McClendon

Examiner

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SMc